

1. A photovoltaic power converter system comprising:
 - a photovoltaic array;
 - an inverter electrically coupled to said photovoltaic array to generate an output current for energizing a load connected to said inverter and to a mains grid supply voltage; and
 - a controller including a first circuit coupled to receive a load current to measure a harmonic current in said load current, said controller comprising:
 - a second circuit to generate a fundamental reference drawn by said load; and
 - a third circuit for combining the measured harmonic current and said fundamental reference to generate a command output signal for generating the output current for energizing the load connected to said inverter.
2. The photovoltaic power converter system of claim 1, wherein said first circuit comprises a notch filter configured to pass harmonics present in said load current.
3. The photovoltaic power converter system of claim 1, wherein said second circuit comprises a phase lock loop coupled to receive said supply voltage and generate a sinusoid corresponding to the frequency of said supply voltage.
4. The photovoltaic power converter system of claim 3, wherein said second circuit further comprises a mixer configured to receive said sinusoid and a signal indicative of the magnitude of current available from the photovoltaic array for generating said fundamental reference.
5. The photovoltaic power converter system of claim 1, wherein said controller is selected from the group consisting of a micro-controller, a Field Programmable Gate Array device and an Application Specific Integrated Circuit device.

6. A controller for a photovoltaic power converter system including a photovoltaic array coupled to an inverter to generate an output current for energizing a load connected to said inverter, said controller comprising:

a first circuit coupled to receive a load current to measure a harmonic current in said load current;

a second circuit to generate a fundamental reference drawn by said load; and

a third circuit for combining the measured harmonic current and said fundamental reference to generate a command output signal for generating the output current for energizing the load connected to said inverter.

7. The controller of claim 6, wherein said first circuit comprises a notch filter configured to pass harmonics present in said load current.

8. The controller of claim 6, wherein said second circuit comprises a phase lock loop coupled to receive a supply voltage and generate a sinusoid corresponding to a frequency of said supply voltage.

9. The controller of claim 8, wherein said second circuit further comprises a mixer configured to receive said sinusoid and a signal indicative of the magnitude of current available from the photovoltaic array for generating the fundamental reference drawn by said load.

10. The controller of claim 6, selected from the group consisting of a micro-controller, a Field Programmable Gate Array device, and an Application Specific Integrated Circuit device.

11. A method for controlling a photovoltaic power converter system including a photovoltaic array coupled to an inverter to generate an output current for energizing a load connected to said inverter, said method comprising:

receiving a load current to measure a harmonic current in said load current;

generating a fundamental reference drawn by said load; and

combining the measured harmonic current and said fundamental reference to generate a command output signal for generating the output current for energizing the load connected to said inverter.

12. The method of claim 11, wherein the receiving of the load current comprises processing said load current to pass harmonics present in said load current.

13. The method of claim 11, wherein said generating of a fundamental reference comprises receiving a supply voltage to generate a sinusoid corresponding to a frequency of said supply voltage.

14. The method of claim 13, wherein said generating of a fundamental reference further comprises mixing said sinusoid and a signal indicative of the magnitude of current available from the photovoltaic array for generating the fundamental reference drawn by said load.